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10/002,141	12/05/2001	Alexander Beeck	033275-316	3862

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EXAMINER
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WIEHE, NATHANIEL EDWARD

ART UNIT	PAPER NUMBER
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3745

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11/29/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/002,141	<b>Applicant(s)</b> BEECK ET AL.	
	<b>Examiner</b> NATHANIEL WIEHE	<b>Art Unit</b> 3745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3, 16, 22-29, 34 and 35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3, 16, 22-29, 34 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 25 October 2010 have been fully considered but they are not persuasive.

The previous objection to claim 16 has been rendered moot by Applicant's amendment.

Applicant's first argument is that Semmler et al.'s second passage cannot be considered dimensioned so as to allow for insertion of a borescope. The examiner respectfully disagrees. Applicant first contends that the Semmler et al.'s passage is constituted by "an elongated narrow slot". However, the passage of Semmler et al. to which Applicant cites (column 3, line 63), specifically states that the blowout hole, i.e. the trailing edge passage shape, is "blow-out *openings*, or a blow-out slot"[emphasis added]. Thereby, Semmler teaches openings, i.e. generally circular holes, are well as slots. Therein, contrary to Applicant's assertion, the passages do not necessarily include the purported drawback of having a narrow transverse dimension. Applicant next asserts that such a narrow transverse dimension would be "on the order of 4mm" and that since, "[b]orescopes typically have a transverse dimension on the order of 8mm" Semmler's slot is incapable of allowing for the insertion of a borescope. However, Applicant fails to indicate where any such dimensions have been derived. The specification is silent as to the actual dimension of the inspection hole or the borescope and fails to define what dimensions are necessary to allow for the introduction of a borescope. Again, the passage of Semmler et al. is not necessarily a

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slot. Further, the actual dimension of a hole that would allow the insertion of a borescope can be established from the DE 198 01 804 C2, specifically providing that a borescope can be inserted in a hole that is more than 1mm, particularly 1.2 mm up to 1.5 mm, or more than 1.5 mm. Therein, by Applicant's own arguments, the purported 4mm narrow dimension of Semmler et al. would easily allow for introduction of a borescope.

Applicant next asserts that the pins/ribs in Semmler et al.'s passage "would clearly hinder the insertion of a borescope". However, hinder does not mean prevent. Having cooling structures that somewhat interfere with the movement of the borescope along the passage does not actually prevent the claimed ability "to enable the introduction of a borescope". Further, Applicant over emphasizes the amount to which these elements would block the passage relative to the dimension necessary for the insertion of the borescope. Again, pursuant to DE 198 01 804 C2, a borescope need only more than 1mm, at least minimally 1.25 mm, to allow their insertion. Again going back to Applicant's assertion, the passage is at least 4 mm, Applicant's purported narrow transverse dimension, and the actual lateral dimension shown in Semmler et al.'s, as contrary to the narrow transverse dimension, would be significantly greater than 4 mm. Further, it is clear that the pins/ribs extend to no more than half the dimension of the passage. Thereby, at a minimum and in accordance with Applicant's own arguments, the open space allowing for the borescope to pass there through is in the range of at least 2 mm, which according to DE 198 01 804 C2 is more than sufficient to enable introduction of said borescope.

Applicant next asserts that Semmler et al.'s passage cannot be a dust discharge aperture and that the differences between Semmler et al. and Schwarzmnn et al. prevent the examiner from concluding that such an aspect is inherent to Semmler et al. The examiner respectfully disagrees. What makes that passage a dust discharge aperture? Looking to Applicant's own, brief, specification it appears that only proximity to the turn is necessary for such a function. Applicant articulates no requirements with respect to the dimension, shape, cross-section, etc. to allow for such a function. Rather, the dust discharge aperture is merely required to be proximate to the turn so as to take advantage of the inherent inertial differences between the relatively massive dust particle and the relatively negligible mass air particles. Semmler et al.'s passage is clearly so proximate and would inherently operate as a dust discharge passage. Such a conclusion is only bolstered by a fair reading of Schwarzmnn et al. The purported contrasting tapered cross-section and lack of extension to the trailing edge do nothing to undermine the determination of inherency.

Regarding claim 22, Applicant first asserts that "perpendicular" in the context of the claim means explicitly and only 90°. However, there is nothing in the specification, drawings or context of the claim to require such an explicit definition. The specification never even utilizes the term perpendicular nor 90 degrees. The drawings are not indicated as being drawn to scale. The specification only states that, in relation to the embodiment of Fig. 2, the "aperture 5 however runs, not radially, but in the axial direction." (Applicant's Specification page 4, lines 19-20). Given its broadest reasonable interpretation in light of the specification the claimed "perpendicular" extent

of the second portion relative to the first wall truly means generally perpendicular so as to be generally axial. Semmler et al.'s passage is clearly generally perpendicular as required by the claim.

Regarding claim 23, Applicant argues that the web (34) of Semmler et al. is attached directly to the tip and thus cannot meet the claim limitation. The examiner respectfully disagrees. The claim does not require the web, i.e. the second wall, itself to "not [be] connected to the second portion of the third wall". Rather that "*first portion of the second wall*"[emphasis added] has to be so dis-connected. Such a first portion, as defined in the rejection, relates only to the wall portion below the second portion (40) of the second wall. Applicant's illustration fails to include the second portion and thus doesn't even show the relevant first portion claimed.

Regarding new claim 35, Applicant has added claim 35 to emphasize that the "second portion of the third wall is free of apertures." However, such a claim is not supported by the originally filed specification. It is true that the drawings do not depict any cooling holes on the 'skin' of the turbine blade. However, the limitation is itself exclusory, i.e. constitutes a negative limitation. "Any negative limitation or exclusionary proviso must have basis in the original disclosure." MPEP § 2173.05(i). The specification never indicates that film cooling, tip cooling or other such typical cooling passages of known turbine blades are explicitly inapplicable to the instant invention. Rather, applicant looks solely to the borescope insertion and dust discharge abilities of the passage and wholly ignores that other cooling effects provided for or applicable to the passage. Applicant simply cannot distinguish a claim by providing an exclusory

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proviso removing an aspect not contemplated by the invention itself and not even noted in the specification.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 35 requires the negative/exclusory requirement that the third wall be "free of apertures." "Any negative limitation or exclusionary proviso must have basis in the original disclosure." MPEP § 2173.05(i). Here, the specification fails to provide any support for the contention that the third wall was even envisioned to explicitly exclude any further cooling passages in said wall. The specification never indicates that the blade is inapplicable to further cooling such as film cooling or blade tip cooling each of which would necessitate the inclusion of apertures in the third wall. In fact Applicant's specification specifically notes that "[a]s a rule, numerous cooling air bores are providing" at the leading edge, over the surface and at the rear edge. (Applicant's specification page 1, lines 11-15). Thereby, Applicant's specification would not have reasonably convey to one skilled in the art that the Applicant

was in possession of the claimed invention including such an exclusionary limitation as the time of filing of the application.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3,16,22-29 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Semmler et al. (6,347,923), hereinafter “Semmler”. Semmler discloses a component, i.e. blade, of a fluid flow machine including a leading edge (16), trailing edge (18), and a coolant passage. The coolant passage includes a first section (24) through which cooling medium flows toward a curved flow section, a second section (26) adjacent the first section (24) through which a cooling medium flows away from the curved flow section, the first (24) and second (26) sections are separated from each other by a first wall (32) and a second wall (34) has a portion defining the second section (26). As most applicable to Fig. 4, Semmler includes a second passage (42) tangentially branching off of the curved flow section and generally perpendicular, so as to extend in the generally axial direction, to the first and second sections (24,26) that is defined by a second portion (40) of the second wall (34). The second passage (42) is partially defined by a second portion, i.e. the tip, of a third wall, and the first section is



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partially defined by a first portion, i.e. the leading edge, of a third wall. The first portion, i.e., the portion of web (34) below the second portion (40), of the second wall is not connected to the second portion of the third wall, i.e. the blade tip adjacent passage (42). The second passage (42) includes a relatively large exhaust/exit port at the trailing edge and provides for a straight line of sight through such a port along the passage to the first portion of the third wall, i.e. the leading edge. A portion of the cooling medium (K2) is diverted in the curved flow section and travels through the second passage, while the majority of the cooling medium (K1) travels into the second passage (26). The coolant medium is introduced into the blade through a single passage (K) disposed in the foot portion (30) of the blade. Semmler is silent as to the effect that the second passage has with respect to dust in the coolant medium.

However, it is inherent that the arrangement of Semmler would act such that through passage (36), second passage (42) and the exhaust/exit port at the end of the second passage (42) discharge dust from the coolant medium, as evidenced by Schwarzmänn et al. (4,775,296), hereinafter "Schwarzmänn". Specifically, Schwarzmänn discloses a blade having a coolant arrangement similar to that of Semmler, in that coolant medium flows through a first passage (54) around a curved section and back inwardly through a second passage. Schwarzmänn further includes a hole (72) through the second wall (38) adjacent the tip (36) of the blade that is similar to through passage (36) of Semmler. The hole (72) acts to discharge dust particles that would otherwise be trapped in the outer portion of the curved section due to the rotation forces generated by the fluid flow machine. (Schwarzmänn column 4, lines 35-45). Thereby, the dust

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discharging effect noted by Schwarzmann is also produced by the like arrangement of Semmler. Additionally, the relative greater mass and inertia of the dust particles would inherently entrain them into the outer flow (K2) of Semmler exiting the blade through the exhaust/exit port at the end of the second passage, which constitutes a dust discharge aperture. Further, a borescope is capable of being introduced through the second passage due to the relatively large dimension of the exhaust/exit port at the end of the second passage (42), the second passage, and the through passage (36). Additionally, Applicant's arguments dated 30 April 2010 constitute an admission that Semmler's passage (42) is so dimensioned. Specifically, Applicant has attested that Semmler's passage is "typically on the order of 4 mm" and as evidenced by DE 198 01 804 C2, already part of the record at the time of such assertion, a borescope is insertable through a hole having a dimension greater than 1mm, particularly between 1.2 mm and 1.5 mm or, if necessary, over 1.5 mm. Thus, the asserted dimension of Semmler's passage is more than capable of allowing introduction of a borescope and thus Semmler meets the limitation of the aperture being "dimensioned to enable the introduction of a borescope" there through.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **NATHANIEL WIEHE** whose telephone number is (571)272-8648. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN WIEHE/  
Nathan Wiehe  
Examiner  
Art Unit 3745